CLAIMS

What is claimed is:

1. A method, comprising:

interacting by a learning component of a server of a network with one or more clients and an environment of the network;

conducting by the learning component different trials of one or more options in different states for network communication via a protocol of the network;

receiving, by the learning component, performance feedback for the different trials as rewards; and

utilizing by the learning component the different trials and associated resulting rewards to improve a decision-making policy associated with the server for negotiation of the one or more options.

2. The method of claim 1, further comprising uploading by the learning component an optimum set of options based on the different trials and rewards and observed configurations of the environment associated with the optimum set of options to a centralized place.

3. The method of claim 2, wherein one or more other servers download from the centralized place the optimum set of options to utilize as an initial

point to start a new learning process in the environment of the one or more other servers.

4. The method of claim 1, wherein the option negotiation component applies a reinforcement learning algorithm to improve the decision-making policy associated with the server for negotiation of the one or more options.

5. The method of claim 4, wherein the reinforcement algorithm utilizes a Q-learning method.

6. The method of claim 5, wherein the Q-learning algorithm iteratively calculates value functions of an optimal policy for option selection by the option negotiation component.

7. The method of claim 1, wherein the option negotiation component is part of a trivial file transfer protocol (TFTP) server.

8. An apparatus, comprising:

an option negotiation component to select one or more options for a communication protocol, receive rewards as performance feedback associated with the selection of the one or more options, and adjust the selection of the one or more options based on the rewards; and

a file transfer component to transfer a file utilizing an optimum set of the one or more options selected by the option negotiation component based on the rewards and adjusted selections.

9. The apparatus of claim 8, wherein the option negotiation component applies a reinforcement learning algorithm that determines the one or more options to select, the performance feedback for the selection, and the adjustment of the selection.

10. The apparatus of claim 9, wherein the reinforcement algorithm utilizes a Q-learning algorithm.

11. The apparatus of claim 10, wherein the Q-learning algorithm iteratively calculates value functions of an optimal policy for option selection by the option negotiation component.

12. The apparatus of claim 8, wherein the option negotiation component and the file transfer component are components of a trivial file transfer protocol (TFTP) server.

13. The apparatus of claim 8, wherein the option selection component further to upload the optimum set of options and associated configurations of an environment associated with the optimum set of options to a centralized place.

14. The apparatus of claim 13, wherein one or more servers download the optimum set of options for an environment similar to the associated environment.

15. A system, comprising:

a network environment; and

a server communicatively coupled to the network environment via a network interface and including:

an option negotiation component to select one or more options for a communication protocol, receive rewards as performance feedback associated with the selection of the one or more options, and adjust the selection of the one or more options based on the rewards; and

a file transfer component to transfer a file utilizing an optimum set of the one or more options selected by the option negotiation component based on the rewards and adjusted selections.

16. The system of claim 15, wherein the option negotiation component applies a reinforcement learning algorithm that determines the one or more options to select, the performance feedback for the selection, and the adjustment of the selection.

17. The apparatus of claim 9, wherein the reinforcement algorithm utilizes a Q-learning algorithm.

18. The apparatus of claim 10, wherein the Q-learning algorithm iteratively calculates value functions of an optimal policy for option selection by the option negotiation component.

19. The system of claim 15, wherein the server is a trivial file transfer protocol (TFTP) server.

20. The system of claim 15, wherein the option negotiation component uploads an optimum set of options based on the different trials and rewards and observed configurations of the environment associated with the optimum set of options to a centralized place.